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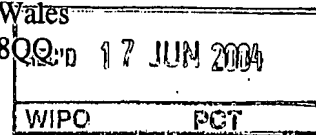
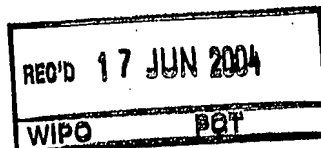
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Dated 9 June 2004

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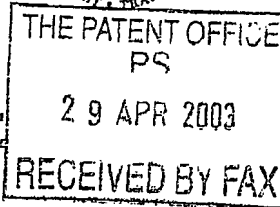
Patents Act 1977
(Rule 16)



29APR03 E01552-12010002
P017700 0100-0309754.0

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)



The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

1. Your reference

mgr.2992.uk.cr.d

2. Patent application number

(The Patent Office will fill in this part)

0309754.0

29 APR 2003

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Smartscope MD Limited
The Dell
Rothiemurchus
AVIEMORE
PH22 1QH

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

8021633001

4. Title of the invention

Laryngoscope blade

5. Name of your agent (if you have one)

Kennedys Patent Agency Limited

"Address for service" in the United Kingdom
to which all correspondence should be sent
(including the postcode)

Floor 5, Queens House
29 St Vincent Place
GLASGOW
G1 2DT

Patents ADP number (if you know it)

08058240002 ✓

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

NO

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an

applicant, or

c) any named applicant is a corporate body.

See note (d))

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9. Enter the number of sheets for any of the following items you are filing with this form.
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Continuation sheets of this form

Description 9

Claim(s)

Abstract

Drawing(s) 2

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature
KENNEDYSDate
29 April 2003

12. Name and daytime telephone number of person to contact in the United Kingdom

Claire Rutherford

0141 226 6826

Warning

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Notes

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1 Laryngoscope blade

2

3 The present invention relates to medical devices for
4 carrying out internal examination and relates
5 particularly to laryngoscopes to assist intubation of a
6 tracheal tube.

7

8 Insertion of a tracheal tube is an important procedure in
9 providing an airway to an anaesthetist prior to a
10 surgical operation. Tracheal tubes also often need to be
11 inserted in an emergency situation into the airway of an
12 unconscious patient by paramedics or doctors. Insertion
13 of a tracheal tube requires significant skill, and
14 laryngoscopes are generally used to assist the insertion
15 of the tube by restraining the patient's tongue and
16 allowing a clear view of the larynx and the entrance to
17 the trachea. Considerable skill and care is required in
18 carrying out this procedure in order to avoid damage to
19 the patient's teeth and soft tissue of the throat.

20

21 Often problems occur when a practitioner is attempting to
22 intubate a patient using a laryngoscope as it is often
23 difficult for the practitioner to see what is going on.

2

1 Figures show that in approximately 12% of cases trauma
2 occurs during intubation (which affects a large number of
3 people when you consider there are over 12 million
4 intubations carried out annually). Also, during the
5 1980s and 1990s, 2500 deaths (or approximately 3 per
6 week) occurred in Europe due to an inability to intubate
7 and these figures have not changed substantially in
8 recent years.

9
10 Obviously in order to use a laryngoscope on a patient, it
11 is important to know that the laryngoscope is cleaned
12 sufficiently and there is no risk of cross contamination
13 between patients. There is evidence to show that
14 standard cleaning procedures are not always fully
15 effective at removing contaminants such as bacteria from
16 the laryngoscope (JR Hall. 'Blood contamination of
17 equipment...' Anaesthesia and Analgesia. 1994; 78:1136-9
18 MD Ester, LC Baines, DJ Wilkinson & RM Langford.
19 'Decontamination of Laryngoscopes: a survey of national
20 practice.' Anaesthesia, 1999,54).

21
22 Typically, in order to clean a laryngoscope, the blade is
23 soaked and autoclaved. The handle can undergo a similar
24 procedure or can simply be wiped down as it does not make
25 contact with the patient as the blade does. The cleaning
26 takes a significant amount of time, which means that it
27 is necessary to have a number of handles and blades in
28 rotation to ensure that there are always clean
29 laryngoscopes available if required. This results in a
30 time consuming a costly procedure needing to be put in
31 place.

32

3

1 In order to try and overcome the problems associated with
2 laryngoscope use a number of suggestions have been put
3 forward. Disposable blades are available for use,
4 however, these can be lacking in strength and only allow
5 the most basic airway opening to be achieved due to their
6 relative simplicity of design. Protective sheaths can
7 also be used which slip over a standard laryngoscope
8 blade to act as a guard. While useful, it is optional to
9 a user whether the sheath is used or not and quite often
10 it is the case the sheath is discarded or forgotten.

11

12 Preferred embodiments of the present invention seek to
13 overcome the above disadvantages of the prior art.

14

15 Throughout this Application the term blade should be read
16 in a broad sense to cover not only laryngoscope blades
17 but also to cover speculums or elements that are inserted
18 into body cavities.

19

20 According to a first aspect of the present invention,
21 there is provided a medical device comprising a body
22 portion and a blade portion, wherein the blade portion is
23 separable from the body portion and wherein the blade
24 portion comprises a channel running longitudinally
25 through at least part of the blade.

26

27 Preferably the medical device is a laryngoscope.

28

29 According to a second aspect of the present invention,
30 there is provided a blade for use on a medical device
31 wherein the blade comprises a channel running
32 longitudinally through at least part of the blade.

33

4

1 Preferably the channel is a tubular passage with the
2 perimeter of the passage being any appropriate cross
3 section.

4

5 Preferably the blade is made from a plastic material.

6

7 Preferably the blade is transparent.

8

9 Preferably the blade portion has an aperture at one end
10 of the blade which marks the start of the channel.

11

12 Preferably at the opposite end of the channel to the
13 aperture the blade is formed into a lens.

14

15 Preferably the lens is integral to the blade.

16

17 Preferably into the channel is inserted one or more from
18 the list of:

19

20 A light source

21 An image capture means

22 A fibre optic cable

23

24 Optionally the light source is provided by fibre optics.

25

26 Preferably the image capture means is a camera.

27

28 Optionally, the camera does not require a lens section.

29

30 Most preferably, a strengthening element is inserted into
31 the channel.

32

33 Preferably the strengthening element is a metal rod.

1
2 Optionally, the channel is able to transmit an image from
3 one end of the channel to the other.
4

5 According to a third aspect of the present invention,
6 there is provided a medical device comprising an image
7 transmitting element which is able to transmit an image
8 without requiring camera component parts, wherein the
9 image transmitting element comprises one or more lenses,
10 and one or more reflecting means, wherein the image is
11 captured by a lens and reflected by one or more
12 reflecting means.
13

14 Preferably there are two or more lenses.
15

16 Preferably the second lens magnifies the image and
17 projects it onto a screen.
18

19 Preferably the reflecting means is a mirror.
20

21 Most preferably the image transmitting element is
22 incorporated within the blade of a medical device.
23

24 Most preferably the medical device is a laryngoscope.
25

26 Alternatively, the image transmitting element is attached
27 on to a medical device.
28

29 Preferably the image transmitting element is attached on
30 to a laryngoscope blade.
31

32 Most preferably the image transmitting element is formed
33 integrally with the blade of a medical device.

1

2 According to a fourth aspect of the present invention,
3 there is provided a medical device comprising a body
4 portion and a blade portion, wherein the blade portion is
5 separable from the body portion, and wherein at any time
6 when the blade is separated from the body portion, there
7 is a spoiling mechanism in place which will prevent
8 reattachment of the blade and body portions.

9

10 Preferably the spoiling mechanism comprises a device for
11 tripping electrical contacts to prevent their continued
12 use.

13

14 Alternatively, the spoiling mechanism comprises locking
15 elements which break off when the handle and body are
16 separated.

17

18 Preferably the locking elements comprise a male
19 protrusion and a female ingression, one of which is
20 provided on the blade and one of which is provided on the
21 body.

22

23 In order to provide a better understanding of the present
24 invention, embodiments will now be described by way of
25 example only, and with reference to the following
26 Figures, in which:

27

28 Figure 1 shows a laryngoscope according to the first and
29 second aspect of the present invention; and

30

31 Figure 2 shows an image transmitting element according to
32 the third aspect of the present invention.

33

7

1 In the preferred embodiment of the present invention, the
2 medical device is a laryngoscope which can be used for
3 intubation of a tracheal tube.

4

5 According to the first aspect of the present invention,
6 there is a provided a laryngoscope 1 which has an
7 entirely disposable blade 3. The blade 3 attaches to the
8 body section 2 of the laryngoscope 1, and the blade 3 has
9 an internal core 6 which allows various objects to be
10 inserted into the blade 3, such that they do not come
11 into contact with the patient. This means that anything
12 inserted into the core 6 can be re-used while the blade
13 3, which forms the rigid outer layer, can be discarded.

14

15 In the preferred embodiment, the blade 3 is made from a
16 transparent material, such as plastic or perspex. If
17 additional strength is required, a strengthening element
18 5 can be inserted into the core 6 of the blade 3, either
19 as an integral element which can be discarded along with
20 the blade 3 after use, or as a reusable element which can
21 optionally be attached to the body 2 of the laryngoscope
22 1, such that it can be inserted into the next blade 3
23 that is to be used.

24

25 One of the most important aspects of the core 6 is that
26 it can be used to house a light source or a camera
27 element, which can be inserted into the core 6 in the
28 centre of the blade 3 so that a practitioner can
29 visualise a trachea to help in the positioning of a
30 tracheal tube. The electrical components which run the
31 camera or the light can be housed in the body 2 of the
32 laryngoscope 1 or externally to the laryngoscope and the
33 relevant parts can simply be slipped in and out of the

8

1 core 6 and of the blade 3 when required. This again
2 means that the blade 3 can be discarded with the
3 expensive lighting or camera elements being kept for
4 further use, without them having ever been in contact
5 with a patient.

6

7 In order to miniaturise a camera element, the blade 3 can
8 have a lens 4 incorporated into it, such that the camera
9 itself does not require a lens, but can simply be slipped
10 into the core 6 of the blade 3, such that the lens 4 on
11 the blade 3 acts as a lens for the camera. This
12 inclusion of the lens 4 into the disposable blade 3 means
13 that the camera element can be much smaller than is
14 typically achievable, making it particularly suitable for
15 use in a medical device, such as a laryngoscope.

16

17 One of the benefits of the disposability of the blade 3
18 is that there will be no cross-contamination to patients,
19 and no lengthy cleaning procedures are required.

20 However, to further ensure that a blade 3 is not reused,
21 it is possible to include a spoiling mechanism between
22 the blade 3 and the body 2 of the laryngoscope 1. The
23 spoiling mechanism can take the form of a breaking of
24 electrical connections when the blade 3 and body 2 are
25 parted, such that if the same blade 3 and body 2 are
26 reconnected, no power is provided to anything inserted
27 into the core 6 of the blade 3. Alternatively, the blade
28 3 may comprise protrusions which are able to fix into
29 ingressions in the body 2 of the laryngoscope 1, such
30 that the protrusions break off when the blade 3 is
31 removed from the body 2, such that the blade 3 cannot
32 then be reused.

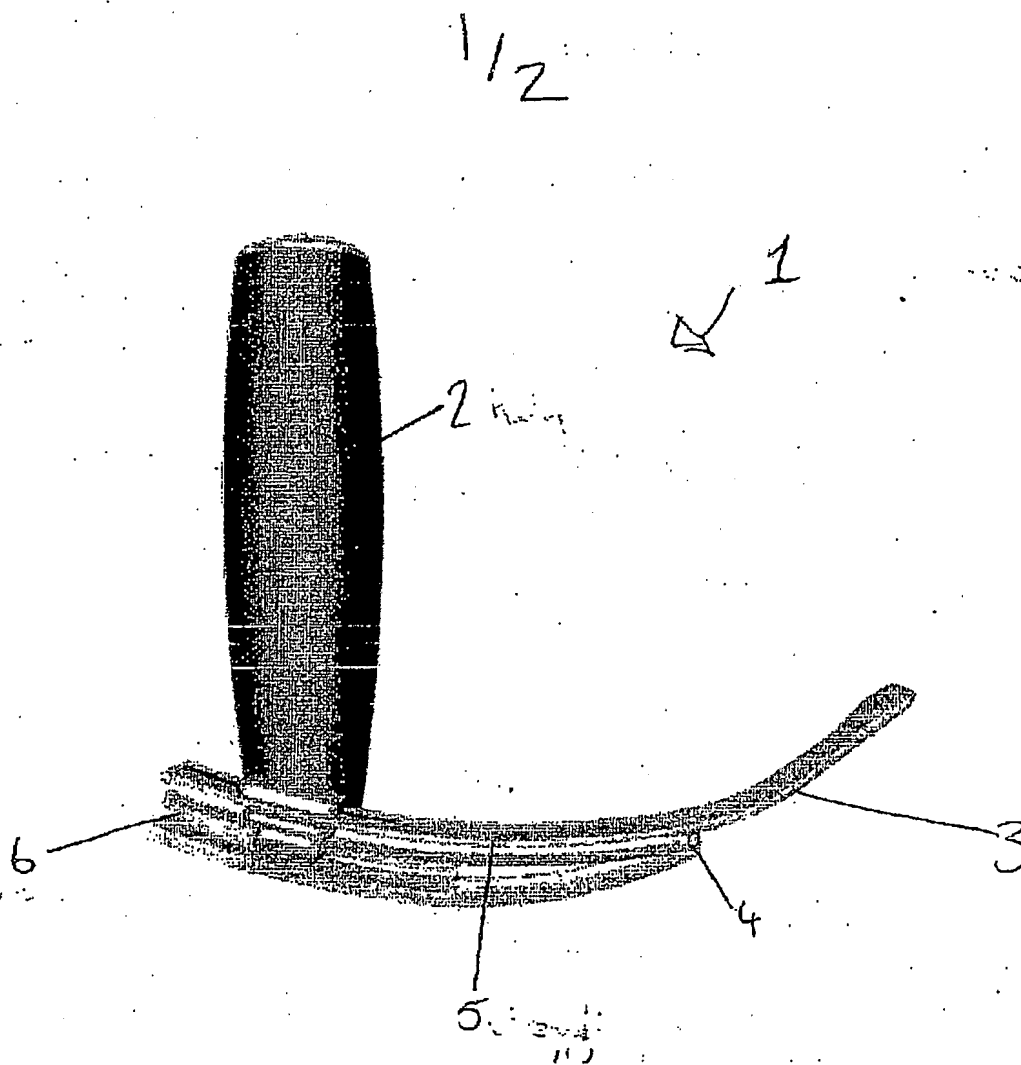
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1 It can be seen that the current invention has a number of
2 benefits over the prior art and a number of possible
3 uses. Although the examples above relate to a
4 laryngoscope, it can be seen that the concept can be
5 extended to other medical and veterinary devices and
6 still stay within the scope of the present invention.
7 The fact that the blade is fully disposable is also of
8 great importance, as it means that practitioners are
9 required to change blades and the product is both simple
10 to use and cheap to manufacture.

11

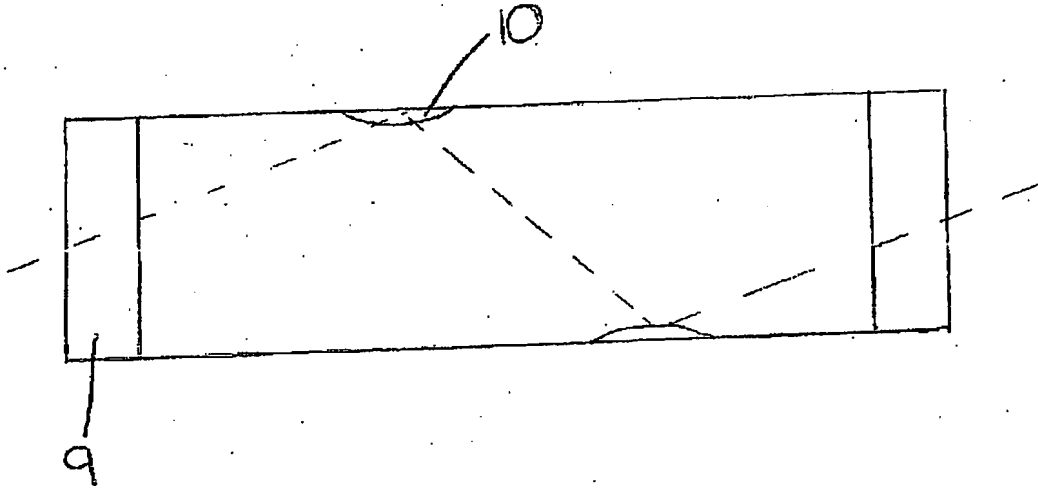
12 It will be appreciated by persons skilled in the art that
13 the above embodiment has been described by way of example
14 only, and not in any limiting sense, and that various
15 alterations and modifications are possible without
16 departure from the scope of the invention as defined by
17 the appended Claims.

INFORMAL



$2\frac{1}{2}$

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